Application Serial No. 09/858,379 - Filed May 16, 2001

IN THE CLAIMS

Please amend claims 1-35, 38-40, 45-47, and 50-53 as indicated below.

1. (Currently Amended)   A ~~digital television application protocol~~ system for providing communication between applications running on a client device and a service provider comprising:

> a meta language comprising an application level communication protocol for communication of messages for requests and information between client applications and service providers;

> a communication link between a client device and a service provider for sending and receiving requests and information between the service provider and the client;

> a digital television application transport protocol (DATP) ~~protocol~~ process residing in the client device for sending a DATP message encapsulating a meta language message to a service provider; and

> a conversion function for converting ~~the client's~~ a digital television application protocol (DAP) request of the client into a DATP message for transmission to the service provider over the communication link.

2. (Currently Amended)   The ~~protocol~~ system of claim 1 wherein the DATP process interfaces with ~~the~~ a native language of the client device and is positioned within ~~the~~ an OSI data link layer in the client device.

3. (Currently Amended)   The ~~protocol~~ system of claim 1 further comprising a service gateway (SGW) for converting DATP messages into a plurality of standard protocols for transmission to a service provider.

4. (Currently Amended)   The ~~protocol~~ system of claim 3 further comprising a transcoder for converting content received from a service provider into a format suitable for display on the client device.

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5. (Currently Amended) The ~~protocol~~ system of claim 3 wherein the DATP process at the client receives compressed data and decompresses the compressed data; and the service gateway performs compression of client data sent back to the service provider from the client.

6. (Currently Amended) The ~~protocol~~ system of claim 1 wherein the DATP process at the client receives encrypted data and decodes the encrypted data using RSA, wherein the decryption exponent ~~m~~ e is greater than or equal to 3.

7. (Currently Amended) The ~~protocol~~ system of claim 3 wherein the SGW performs asymmetrical data routing of data sent to the client and sent back to the service provider from the client based on ~~the~~ (i) a size of the data, ~~and~~ (ii) availability of ~~the~~ a broadcast stream, and ~~the~~ (iii) point-to-point connections between the SGW and ~~the~~ clients.

8. (Currently Amended) The ~~protocol~~ system of claim 3 further comprising: a light HTTP (LHTTP) language for encapsulating HTTP requests within DATP messages and sending ~~the~~ LHTTP requests to the service gateway for translation into a standard protocol.

9. (Currently Amended) The ~~protocol~~ system of claim 1 further comprising: a data name service for resolving a service identifier for an application server.

10. (Currently Amended) The ~~protocol~~ system of claim 1 wherein the DATP message is divided into individually encrypted message fragments.

11. (Currently Amended) The ~~protocol~~ system of claim 1 further comprising a DATP reliability layer.

12. (Currently Amended) The ~~protocol~~ system of claim 11 further comprising unreliable DATP messages.

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13. (Currently Amended) The ~~protocol~~ system of claim 1 wherein the ~~DATP~~ digital television application transport protocol spans ~~the~~ data link, network, transport and session OSI layers.

14. (Currently Amended) The ~~protocol~~ system of claim 1 wherein a sending ~~enity~~ entity determines that memory is available at a receiving entity before sending a DATP message.

15. (Currently Amended) The ~~protocol~~ system of claim 1 wherein a business filter associated with a given client is set to select ~~the~~ most relevant information for the given client based on at least one of the following: client preferences, viewer profiles, or transaction history.

16. (Currently Amended) The ~~protocol~~ system of claim 1 further comprising an offline viewer identification function which enables offline viewer payment.

17. (Currently Amended) The ~~protocol~~ system of claim 1 further comprising an offline order form.

18. (Currently Amended) The ~~protocol~~ system of claim 1 wherein a store and forward library is provided on top of a DATP, the library comprising messages having different timing constraints for delivery comprising at least one or more of ~~;~~ "as soon as possible", "when connected", "after a random period of time", "after a set period of time", "after a specified occurrence, event or message" and "spread over available time/bandwidth."

19. (Currently Amended) The ~~protocol~~ system of claim 1 wherein the ~~DATP~~ digital television application transport protocol sits in a transport layer of a typical OSI ~~network~~ model ~~at the transport level~~.

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20. (Currently Amended) The ~~protocol~~ system of claim 1 wherein ~~the DATP~~ the digital television application transport protocol sits in ~~the~~ a service layer of a typical OSI model ~~at the service level~~.

21. (Currently Amended) The ~~protocol~~ system of claim 1 wherein a message is sent from a client to ~~the SGW~~ a service gateway, wherein each DATP message comprises a plurality of DATP message fragments, wherein each fragment contains a sequence number; and a sliding time window of recently used sequence numbers with a time stamp for each sequence number wherein fragments with sequence numbers that appear in the sliding window are ~~disgarded~~ discarded.

22. (Currently Amended) A ~~digital television application protocol~~ system for providing communication between applications running on a server, a client device and a service provider comprising:

    a server hosting service providers;

    a meta language comprising an application level communication protocol for communication of messages for requests and information between client applications and service providers;

    a communication link between a client device and a service provider for sending and receiving information between the service provider and the client;

    a digital television application transport protocol (DATP) protocol client process residing in the client device for sending a DATP message encapsulating a meta language message to a service provider;

    a conversion function for converting ~~the client's~~ a digital television application protocol (DAP) request of the client into a DATP message for transmission to the service provider over the communication link, wherein ~~a the~~ DATP client process of the client interfaces with ~~the~~ a native language of the client device and is positioned within ~~the~~ an OSI data link layer in the client device;

    a service gateway (SGW) for converting DATP messages into a plurality of standard protocols for transmission to a service provider; and

a transcoder for converting content received from a service provider into a format suitable for display on the client device.

23. (Currently Amended) The ~~protocol~~ system of claim ~~23~~ 22 wherein the client receives compressed data and decompresses the compressed data, the service gateway performs compression of client data sent back to the service provider via the service gateway from the client, the client receives encrypted data and decodes the encrypted data using RSA, wherein the decryption exponent ~~m~~ e is greater than or equal to 3 and wherein the encrypted data is divided into individually encrypted DATP message fragments for individual decryption.

24. (Currently Amended) The ~~protocol~~ system of claim 23 wherein the SGW performs asymmetrical data routing of data sent back to the service provider from the client based on ~~the~~ (i) a size of the data, ~~and~~ (ii) availability of ~~the~~ a broadcast stream, and ~~the~~ (iii) point-to-point connections between the SGW and ~~the~~ clients, and wherein the system further ~~comprising~~ comprises: a light HTTP (LHTTP) for encapsulating HTTP requests within DATP messages and sending ~~the~~ LHTTP requests to the service gateway for translation into a standard protocol.

25. (Currently Amended) The ~~protocol~~ system of claim 22 further comprising: a data name service for resolving a service identifier for an application server; a DATP reliability layer, and ~~further comprising~~ unreliable messages, wherein the DATP ~~protocol~~ spans ~~the~~ data link, network, transport and session OSI layers.

26. (Currently Amended) The ~~protocol~~ system of claim 25 wherein a sending ~~enity~~ entity determines that memory is available at a receiving entity before sending a DATP message; and a business filter associated with a given client selects ~~the~~ most relevant information for the given client based on at least one of the following: client preferences, viewer profiles or transaction ~~history~~ history.

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27. (Currently Amended) The ~~protocol~~ system of claim 26 further comprising an offline viewer identification function which enables offline viewer payment and an offline order form.

28. (Currently Amended) The ~~protocol~~ system of claim 23 wherein a store and forward library is provided on top of a DATP, the library comprising messages having different timing constraints ~~such as,~~ including at least one or more of: "as soon as possible", "when connected", "after a random period of time", "after a set period of time", "after a specified occurrence, event or message" and "spread over available time/bandwidth."

29. (Currently Amended) The ~~protocol~~ system of claim 22 wherein a message is sent from a client to the SGW, wherein each DATP message comprises a plurality of DATP message fragments, wherein each fragment contains a sequence number; a sliding time window of recently used sequence numbers with a time stamp for each sequence number wherein fragments with sequence numbers that appear in the sliding window are ~~disgarded~~ discarded.

30. (Currently Amended) A ~~digital television application protocol~~ system for providing communication between applications running on a client device and a service provider comprising:

    a meta language comprising an application level communication protocol for communication of messages for requests and information between the client and the service provider;

    a server providing communication to a service provider;

    a communication link between a client device and a service provider for sending and receiving messages and information between the service provider and the client;

    a digital television application transport protocol (DATP) ~~protocol~~ client process residing in the client device for sending a DATP message encapsulating a meta language message to a service provider, wherein the DATP client process interfaces with ~~the~~ a native language of the client device and is

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positioned within the an OSI data link layer in the client device, wherein
the DATP at the client receives compressed data and decompresses the
compressed data, wherein the DATP at the client receives encrypted data
and decodes the encrypted data using RSA, wherein the decryption
exponent m e is greater than or equal to 3;

a conversion function for converting the client's a DAP request of the client into a
DATP message for transmission to the service provider over the
communication link;

a service gateway (SGW) for converting DATP messages into a plurality of
standard protocols for transmission to a service provider;

a transcoder for converting content received from a service provider into a format
suitable for display on the client device;

the service gateway performs compression of client data sent back to the service
provider from the client;

wherein a DATP message is sent from a client to the service gateway, wherein
each message comprises a plurality of DATP message fragments, wherein
each fragment contains a sequence number; and

a sliding time window of recently used sequence numbers with a time stamp for
each sequence number wherein fragments with sequence numbers that
appear in the sliding window are disgarded discarded.

31. (Currently Amended)   The protocol system of claim 30 wherein the SGW performs
asymmetrical data routing of data sent between the service provider and the client based
on (i) the a size of the data, and (ii) availability of the a broadcast stream, and the (iii)
point-to-point connections between the SGW and the clients, the system further
comprising: a light HTTP (LHTTP) language for encapsulating HTTP requests within
DATP messages and sending the LHTTP requests to the service gateway for translation
into a standard protocol; a data name service for resolving a service identifier for an
application server; a DATP reliability layer; wherein the DATP protocol spans the data
link, network, transport and session OSI layers, wherein a sending entity entity determines

that memory is available at a receiving entity before sending a DATP message; and wherein a business filter associated with a given client selects the most relevant information for the given client based on at least one of the following: client preferences, viewer profiles, or transaction history.

32. (Currently Amended)   The protocol system of claim 31 further comprising: an offline viewer identification function which enables offline viewer payment; an offline order form; and a store and forward library provided on top of a DATP, the library comprising messages having different timing constraints such as, comprising at least one or more of: "as soon as possible", "when connected", "after a random period of time", "after a set period of time", "after a specified occurrence, event or message" and "spread over available time/bandwidth."

33. (Currently Amended)   A method for providing a digital television application protocol for providing communication between applications running on a client device and a service provider comprising:

    providing a server for communication with a service provider;

    providing a meta language comprising an application level communication protocol for communication of messages for requests and information between client applications and service providers;

    providing a communication link between a client device and a service provider for sending and receiving requests and information between the service provider and the client;

    providing a digital television application transport protocol (DATP) protocol process residing in the client device for sending a DATP message encapsulating a meta language message to a service provider; and

    providing a conversion function for converting the client's a DAP request of the client into a DATP message for transmission to the service provider over the communication link.

34. (Currently Amended) The method of claim 33 wherein the DATP process interfaces with ~~the~~ a native language of the client device and is positioned within ~~the~~ an OSI data link layer in the client device.

35. (Currently Amended) The method of claim 33 further comprising: providing a service gateway (SGW) for converting DATP messages into a plurality of standard protocols for transmission to a service provider.

36. (Original) The method of claim 35 further comprising: providing a transcoder for converting content received from a service provider into a format suitable for display on the client device.

37. (Original) The method of claim 35 wherein the DATP at the client receives compressed data and decompresses the compressed data; and the service gateway performs compression of client data sent back to the service provider from the client.

38. (Currently Amended) The method of claim 33 wherein the DATP at the client receives encrypted data and decodes the encrypted data using RSA, wherein the decryption exponent ~~m~~ e is greater than or equal to 3.

39. (Currently Amended) The method of claim 35 wherein the SGW performs asymmetrical data routing of data sent to the client and sent back to the service provider from the client based on ~~the~~ (i) a size of the data, ~~and~~ (ii) availability of ~~the~~ a broadcast stream, and ~~the~~ (iii) point-to-point connections between the SGW and ~~the~~ clients.

40. (Currently Amended) The protocol of claim 35 further comprising: providing a light HTTP (LHTTP) language for encapsulating HTTP requests within DATP messages and sending ~~the~~ LHTTP requests to the service gateway for translation into a standard protocol.

41. (Original) The method of claim 33 further comprising: providing a data name service for resolving a service identifier for an application server.

42. (Original) The method of claim 33 wherein the DATP message is divided into individually encrypted DATP message fragments.

43. (Original) The method of claim 33 further comprising: providing a DATP reliability layer.

44. (Original) The method of claim 43 further comprising: providing unreliable DATP messages.

45. (Currently Amended)   The method of claim 43 wherein the DATP ~~protocol~~ spans ~~the~~ data link, network, transport, and session OSI layers.

46. (Currently Amended)   The method of claim 33 wherein a sending ~~enity~~ entity determines that memory is available at a receiving entity before sending a DATP message.

47. (Currently Amended)   The method of claim 33 further comprising: providing a business filter associated with a given client which is configured ~~is set~~ to select ~~the~~ most relevant information for the given client based on at least one of the following: client preferences, viewer profiles or transaction history.

48. (Original) The method of claim 33 further comprising: providing an offline viewer identification function which enables offline viewer payment.

49. (Original) The method of claim 33 further comprising: providing an offline order form.

50. (Currently Amended)   The method of claim 33 further comprising: providing a store and forward library on top of a DATP, the library comprising messages having different timing constraints for delivery comprising at least one or more of: "as soon as possible", "when connected", "after a random period of time", "after a set period of time", "after a specified occurrence, event or message" and "spread over available time/bandwidth."

51. (Currently Amended)   The method of claim 33 wherein the DATP sits in a transport layer of a typical OSI network model at the transport level.

52. (Currently Amended)   The method of claim 33 wherein the DATP sits in a service layer of a the typical OSI model at the service level.

53. (Currently Amended)   The method of claim 33 wherein a message is sent from a client to the SGW, wherein each DATP message comprises a plurality of DATP message fragments, wherein each fragment contains a sequence number; a sliding time window of recently used sequence numbers with a time stamp for each sequence number wherein fragments with sequence numbers that appear in the sliding window are disgarded discarded.